N° 10,766 A.D. 1902

Date of Application, 10th May, 1902

Complete Specification Left, 30th Jan., 1903—Accepted, 19th Mar., 1903

PROVISIONAL SPECIFICATION.

"Improvements in Film Spools and in their Connections with Photographic Cameras"

We, JOSEPH THACHER CLARKE, of Gayton Corner, Harrow in the County of Middlesex, Architect, and KODAK LTD., of 43, Clerkenwell Road, London, E.C., Manufacturers of and Dealers in Photographic Apparatus, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in the construction of photographic film spools, and the camera keys employed for turning them. It both simplifies and renders more accurate the construction of such adjuncts, since it obviates the necessity for shaping a key slot in the wood by sawing or otherwise indenting the wooden reel, and since it makes not only the fit of the key, but also the total length of the spool itself, dependent upon metal stampings done in the press: this method of manufacture insuring, as is well known, much greater accuracy than does any method dependent upon its execution in wood. Moreover our invention has for its secondary purpose the the prevention of fraud in relation to the film-holding spools intended for use in certain types of photographic cameras and roll holders. Such film spools are necessarily detachable from the cameras in which they are exposed, and it has been found that unscrupulous imitators have made a practice of winding inferior films on spools originally sold for use in,—to give an example,—kodak cameras, while in other cases, imitation spools, though they may be introduced into the kodak cameras at present made, do not fit with sufficient exactness to insure good work: thus misleading purchasers and endangering the reputation of the kodak apparatus. By means of the present invention, fraud of this nature will be prevented the spool being so constructed that any person acquainted with the genuine article can readily identify it, while no spool can be applied to and exposed in a camera provided with our improved key, unless it be constructed in accordance with the principles herein set forth.

According to our invention the key or other device which is carried by the camera and engages the end of the spool is formed, in conjunction with the end of the spool, on the principle of a lock and key having actual and effective wards, or features equivalent to them. Thus it is necessary, in order to apply the spool to our warded camera key, that this spool should be provided with corresponding wards, that is to say with correspondingly projecting portions, as otherwise spool and key will not fit and cannot be operated conjointly.

Hitherto keys for this purpose have been exclusively made in the form of a simple straight bar, or with projecting pins. And hitherto the end of the spool has been exclusively formed with a plain and straight saw-cut, or with apertures bored in the wood. In no case has a film spool been provided with projections to fit corresponding wards in the key.

[*Price* 6*d.*]

To enable our wards to be properly engaged and disengaged, we preferably allow the key to recede bodily and to return into engagement with the spool under the action of a spring, or by hand pressure from without the camera. But a portion of the wards only may do this, other parts of the key being fixed and sliding laterally into appropriate recesses.

The following is an example of one way of constructing the engaging parts:—

The film spools commonly employed to-day comprise a wooden reel or body and a cylindrical metal end carrying a light-protecting flange of sufficient width to shield the edges of the film wound upon the reel. The metal portion is forced on to the end of the wooden reel and is there held by friction, by indentation, or otherwise. In carrying the present invention into effect, this metal cylinder may have one or more projections or lugs, which may be conveniently struck inwards from the metal tube, the dimensions of these projections being sufficient to insure firm engagement with the corresponding recessed wards of the key, and, if desired, cause them to bear against and rotate around the pin centre which is customarily employed upon the supply spool side of roll holders and roll film cameras. It may be assumed, for example, that three such projections are struck inwards from the metal tube so as to lie radially within this cylinder. The wooden reel will then be made shorter than the total length of the spool by an amount equal to the distance from the inner ends of the projecting lugs to the outside surface of the light-protecting flange, so that when the metal portion is forced on to the wooden reel the end of the latter abuts against the internal projections or lugs of the metal cylinder, this being a convenient gauge for insuring that all spools of the same kind shall be of exactly the same length. The camera key, or hand-operated turning mechanism, carries a short metal cylinder of suitable thickness, and of a diameter adapted to fit exactly inside the cylindrical metal end or tubular sinking of the spool. In this mode of construction saw cuts, forming effective wards, are made in the key cylinder in positions corresponding to the radial projections or lugs in the spool end, so that when spool and key are in engagement these lugs fit exactly into the saw cuts, thus providing a secure connection between the parts, and one which will not allow of any spool being used in conjunction with the key unless it be provided with projections or lugs formed in precisely the same manner.

The camera fittings upon the supply spool side, as generally constructed, are provided with central projecting studs or pins, and the inwardly directed projections or lugs in our improved spool end may be made of such a length as to admit, to bear against and to rotate around these central pins. Thus should three or more radial projections be adopted, there will remain between the free ends of these a central or axial gap into which the supporting pins will enter, and a centreing support be thereby obtained.

The other end of our improved film spool, opposite to the key fitting above described, may be constructed as hitherto customary, that is to say with an axial boring in the wooden reel, adapted to receive the centreing pin of either the supply or receiving spool sides of the camera.

The internal projections or lugs in the key end of the spool may be arranged in various ways, and in the form of patterned wards, if desired.

The key adapted to engage this spool end may be formed either as a solid cylindrical boss, having ward recesses as above described, or it may have the shape of a short tube provided with saw-cuts corresponding in position to the projections of the spool end.

It will be obvious that in spool and key connections constructed in accordance with our invention, notable practical advantages are gained over the method at present in use, in which a straight bar projection on the key engages with a slot in the wooden end of the reel, since such a slot is liable to shrinkage and to a splintering of the end fibres of the wood. Any engagement of metal and wooden parts is a frequent source of weakness and uncertainty of fit, whereas

in the present invention the engagement of metal with metal insures both security and accuracy.

By the means above described we are furthermore enabled to utilise the distinctive features of the wards of a lock and key, and thereby to prevent the fraudulent introduction of unauthorised spools into cameras having their winding devices constructed in accordance with the principles of our invention.

Dated this 9th day of May, 1902.

BOULT, WADE & KILBURN
Agents for the Applicants.

COMPLETE SPECIFICATION.

"Improvements in Film Spools and in their Connections with Photographic Cameras".

We, JOSEPH THACHER CLARKE, of Gayton Corner, Harrow, in the County of Middlesex, Architect, and KODAK, LIMITED, of 43 Clerkenwell Road, London, E.C. Manufacturers of and Dealers in Photographic Apparatus, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in the construction of photographic film spools, and the camera keys employed for turning them. It both simplifies and renders more accurate the construction of such adjuncts, since it obviates the necessity for shaping a key slot in the wood by sawing or otherwise indenting the wooden reel, and since it makes not only the fit of the key, but also the total length of the spool itself, dependent upon metal stampings done in the press; this method of manufacture insuring, as is wellknown, much greater accuracy than does any method dependent upon its execution in wood. Moreover our invention has for its secondary purpose the prevention of fraud in relation to the film-holding spools intended for use in certain types of photographic cameras and roll holders. Such film spools are necessarily detachable from the cameras in which they are exposed, and it has been found that unscrupulous imitators have made a practice of winding inferior films on spools originally sold for use in,—to give an example,—kodak cameras, while in other cases, imitation spools, though they may be introduced into the kodak cameras at present made, do not fit with sufficient exactness to insure good work: thus misleading purchasers and endangering the reputation of the kodak apparatus. By means of the present invention, fraud of this nature will be prevented the spool being so constructed that any person acquainted with the genuine article can readily identify it, while no spool can be applied to and exposed in a camera provided with our improved key, unless it be constructed in accordance with the principles herein set forth.

According to our invention the key or other device which is carried by the camera and engages the end of the spool is formed, in conjunction with the end of the spool, on the principle of a lock and key having actual and effective wards, or features equivalent to them. Thus it is necessary, in order to apply the spool to our warded camera key, that this spool should be provided with corresponding wards, that is to say with correspondingly projecting portions, as otherwise spool and key will not fit and cannot be operated conjointly.

Hitherto keys for this purpose have been exclusively made in the form of a simple straight bar, or with projecting pins. And hitherto the end of the spool has been exclusively formed with a plain and straight saw-cut, or with apertures bored in the wood. In no case has a film spool been provided with projections to fit corresponding wards in the key.

To enable our wards to be properly engaged and disengaged, we preferably allow the key to recede bodily and to return into engagement with the spool under the action of a spring, or by hand pressure from without the camera. But a portion of the wards only may do this, other parts of the key being fixed and sliding laterally into appropriate recesses.

The following is an example of one way of constructing the engaging parts:—

The film spools commonly employed to-day comprise a wooden reel or body and a cylindrical metal end carrying a light-protecting flange of sufficient width to shield the edges of the film wound upon the reel. The metal portion is forced on to the end of the wooden reel and is there held by friction, by indentation, or otherwise. In carrying the present invention into effect, this metal cylinder may have one or more projections or lugs, which may be conveniently struck inwards from the metal tube, the dimensions of these projections being sufficient to insure firm engagement with the corresponding recessed wards of the key, and, if desired, cause them to bear against and rotate around the pin centre which is customarily employed upon the supply spool side of roll holders and roll film cameras. It may be assumed, for example, that three such projections are struck inwards from the metal tube so as to lie radially within this cylinder. The wooden reel will then be made shorter than the total length of the spool by an amount equal to the distance from the inner ends of the projecting lugs to the outside surface of the light-protecting flange, so that when the metal portion is forced on to the wooden reel the end of the latter abuts against the internal projections or lugs of the metal cylinder, this being a convenient gauge for insuring that all spools of the same kind shall be of exactly the same length. The camera key, or hand-operated turning mechanism, carries a short metal cylinder of suitable thickness, and of a diameter adapted to fit exactly inside the cylindrical metal end or tubular sinking of the spool. In this mode of construction saw cuts, forming effective wards, are made in the key cylinder in positions corresponding to the radial projections or lugs in the spool end, so that when spool and key are in engagement these lugs fit exactly into the saw-cuts, thus providing a secure connection between the parts, and one which will not allow of any spool being used in conjunction with the key unless it be provided with projections or lugs formed in precisely the same manner.

The camera fittings upon the supply spool side, as generally constructed, are provided with central projecting studs or pins, and the inwardly directed projections or lugs in our improved spool end may be made of such a length as to admit, to bear against and to rotate around these central pins. Thus should three or more radial projections be adopted, there will remain between the free ends of these a central or axial gap into which the supporting pins will enter, and a centreing support be thereby obtained.

The other end of our improved film spool, opposite to the key fitting above described, may be constructed as hitherto customary, that is to say with an axial boring in the wooden reel, adapted to receive the centreing pin of either the supply or receiving spool sides of the camera.

The internal projections or lugs in the key end of the spool may be arranged in various ways, and in the form of patterned wards, if desired.

The key adapted to engage this spool end may be formed either as a solid cylindrical boss, having ward recesses as above described, or it may have the shape of a short tube provided with saw-cuts corresponding in position to the projections of the spool end.

It will be obvious that in spool and key connections constructed in accordance with our invention, notable practical advantages are gained over the method at present in use, in which a straight bar projection on the key engages with a slot in the wooden end of the reel, since such a slot is liable to shrinkage and to a splintering of the end fibres of the wood. Any engagement of metal and wooden parts is a frequent source of weakness and uncertainty of fit, whereas in

the present invention the engagement of metal with metal insures both security and accuracy.

By the means above described we are furthermore enabled to utilise the distinctive features of the wards of a lock and key, and thereby to prevent the fraudulent introduction of unauthorised spools into cameras having their winding devices constructed in accordance with the principles of our invention.

In the accompanying drawings—

Figure 1 is a perspective view partly in section of a film spool constructed in accordance with this invention;

Figure 2 is a perspective view of a winding key adapted for application to the spool shown in Figure 1;

Figure 3 is a vertical sectional view through a portion of a photographic camera or roll holder, showing a winding spool or roll engaged by a winding key and a supply-spool supported on centreing devices;

Figure 4 is a sectional view showing the manner of centreing the end of the spool when used as a supply spool;

Figures 5 and 6 are perspective views partly in section showing modifications of this invention;

Like letters indicate like parts throughout the drawings.

The film spools commonly employed to-day comprise a wooden reel or body having at one end a cross slot for the application of the winding key and at the other end a cylindrical aperture for the reception of a holding centre or pin and at the ends of the spindle cylindrical metal collars are applied carrying light-protecting flanges of sufficient width to shield the edges of the film wound upon the reel. The metal portion is forced on to the end of the wooden reel and is there held by friction, by indentation or otherwise. In carrying the present invention into effect, the spindle A, preferably of wood and having the usual slot for the application of the end of the film or the paper covering thereof, is provided at one or both ends with metal cylinders B, having the integral light excluding flange C at the end and one or more projections or lugs D cut from the body of the cylinder, extending inwardly in the body of the latter and preferably radially towards the centre as shown in Figures 1 and 5. In the example illustrated three such lugs or projections D are used of such dimensions as to ensure firm engagement with corresponding recesses E formed in the ends of the operating key F, so as to enable the latter to positively turn the spool to wind the film. A space is preferably left between the inner ends of the lugs or projections so that they may serve as a means for centreing the spool at one end if desired upon the pin or projection G arranged in the supply-chamber of the camera or roll holder as shown in Figure 3. The collars or cylinders B may be secured to the ends of the spindles in any convenient manner as by forcing them on, and preferably the length of the spindle is less than the total length of the spool by an amount equal to the distance from the inner ends of the lugs to the outside surface of the light protecting flange, so that when the metal portion is forced on to the wooden spindle and end of the latter abuts against the internal projections or lugs of the cylinder, which latter serve as a convenient gauge for ensuring that all spools of the same kind shall be of exactly the same length. If desired, however, the lugs or projections may be forced slightly into the ends of the wooden spindle serving to firmly connect the two and prevent independent movement.

The key in the camera fitting may be of any suitable construction and mounted rotatably upon a spring-supporting arm H to enable the key to be moved longitudinally into and out of engagement with the spool, or it may be arranged to slide longitudinally in a non-return wheel J, mounted in a plate L on a stationary part of the camera, being forced inwardly by a spring M as shown in Figure 3. The end of the spool opposite the key may, if desired, be provided with the usual flanged cylinder, the end of the spindle having an axial boring

in the end adapted to receive a centreing-pin in either the supply or the receiving chamber of the camera or the cylinder with the lugs may be applied to both ends.

In some instances instead of having the ends of the lugs on the cylinder extend into engagement with the centreing projection in the supply-chamber and in order to ensure the proper arrangement of the film a separate bearing block is provided consisting of a disc or hollow N having radial slots therein similar to those in the key for the accommodation of the lugs and journalled loosely on the headed pin O secured to the camera or holder, as shown in Figure 4.

Although it is preferable that the lugs in the cylinder should have their edges extending parallel with the axis of the spindle, it will be understood that they can be punched and arranged as shown in Figure 5, at right angles to the axis. As one of the objects of this invention is to form the co-operating surfaces between the key and spool of metal in order that the parts may be accurately fitted, this can be accomplished in the manner shown in Figure 6 by securing upon the end of the wooden spindle a cap or thimble P, having at its outer end inwardly turned lugs or projections Q formed by punching out the end into the form of the letter K, for instance, the outer flange R and its cylinder S being forced upon or secured to this cap in any suitable manner. The winding key for co-operating with the slots or projections in this cap would of course be provided with corresponding projections or slots; but in each instance the ends of the projections would constitute bearing surfaces, to engage the centreing projection in the film supply chamber such as are now in use, if desired.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. In a photographic film spool the combination with a spindle of a metal cylinder on the end of the spindle provided with integral inwardly-extending lugs substantially as described.

2. In a photographic film spool the combination with a spindle of a metal cylinder on the end of the spindle provided with integral inwardly-extending lugs adapted for engagement with the wards of a winding key.

3. In a photographic film spool the combination with a spindle of a metal cylinder on the end of the spindle provided with integral inwardly-extending lugs separated at their inner edges to form a central bearing.

4. In a metal cylinder for the end of a photographic film spool the combination with a light excluding flange such as C of inwardly-extending lugs such as D substantially as described.

5. In a metal cylinder for the end of a photographic film spool the combination with a light excluding flange such as C of inwardly-extending lugs such as D extending between the end of the spindle and the flange and adapted for engagement with the wards of a winding key.

6. In a photographic film spool the combination with a spindle havings lugs such as D of a disc having slots engaging with the lugs and journalled on a centreing pin for the purpose described.

7. In a photographic film spool the combination with a spindle having lugs such as D of a winding key having corresponding wards and rotatably mounted upon a spring-supporting arm substantially as described.

8. In a photographic film spool the combination with a spindle having lugs such as D of a winding key having corresponding wards retained in engagement by a spring and arranged to slide longitudinally in a wheel such as J.

9. In a photographic film spool the combination with a spindle and a thimble such as P Q on one end thereof of a flanged metal cylinder encircling the thimble substantially as described.

10. The complete photographic film spool substantially as described or as illus-

trated in Figure 1 or in Figure 4 or in Figure 5 or in Figure 6 of the accompanying drawings.

11. The complete key for a photographic film spool substantially as described or illustrated in Figure 2 or in Figure 3 of the accompanying drawings.

Dated this 30th day of January 1903.

JOSEPH THACHER CLARKE.
Boult, Wade & Kilburn,
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1903.

A.D. 1902. May 10. N.º 10,766.

CLARKE & KODAK'S [LTD.] Complete Specification.

(2 SHEETS)

SHEET 1.

SHEET 2.

Fig. 1.

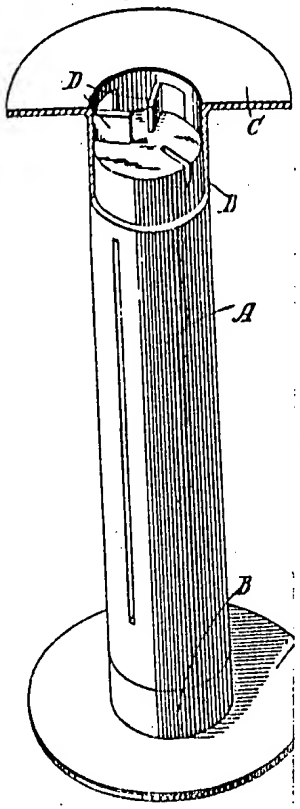


Fig. 3.

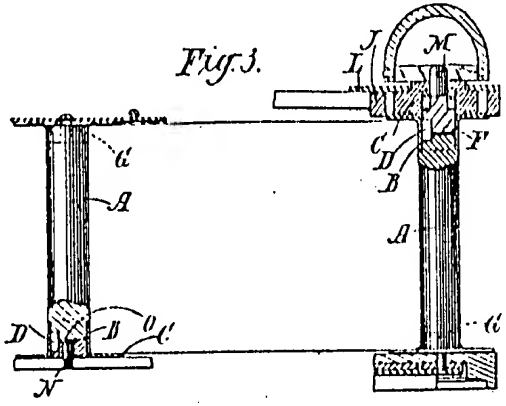


Fig. 5.

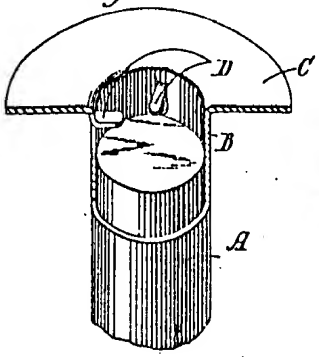


Fig. 6.

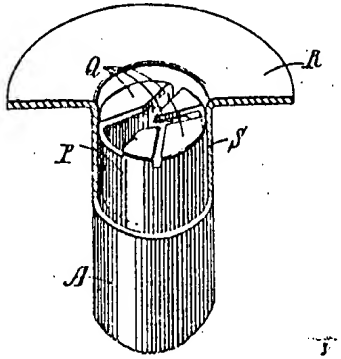


Fig. 2.

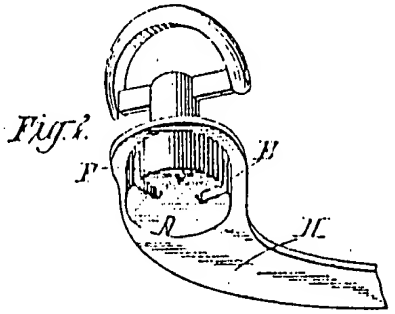
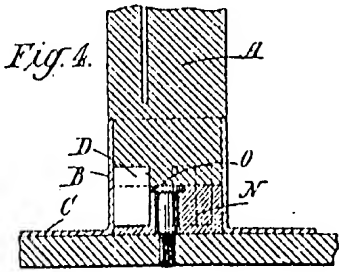


Fig. 4.



Malby & Sons, Photo-Litho.

This Drawing is a reproduction of the Original on a reduced scale.